

[54] **THERAPY FOR RETINOID PATHOGENESIS**[75] **Inventor:** **Josef Pitha, Baltimore, Md.**[73] **Assignee:** **The United States of America as represented by the Department of Health and Human Services, Washington, D.C.**[21] **Appl. No.:** **607,160**[22] **Filed:** **May 4, 1984**[51] **Int. Cl.<sup>4</sup> .....** **A61K 31/095; A61K 31/195**[52] **U.S. Cl. ....** **424/10; 514/562; 514/706**[58] **Field of Search .....** **424/10; 514/706, 562**[56] **References Cited****PUBLICATIONS**

The Merck Index, Entry 5845, (1976).

CA 67:18251a, "The Influence of Testosterone on the Induction of Fatty Liver by Methionine Deficiency 1967.

CA 73:12119r, Myoinositol V. Effect of Myoinositol on the Prevention of Fatty Liver Induced by Orotic Acid; 1970.

CA75:4398g, "Toxicological Assessment of Choline Chloride &amp; Lipotropic Effect" 1970.

77:15050e Effects of Long Term Alcohol Administration on the Development of Fatty Cirrhosis in Choline Deficient Rats 1972.

101:71476z Ameliorating Effects of Carnitine and its Precursors on Alcohol Induced Fatty Liver 1984.

Peck, Retinoids Therapeutic Use in Dermatology Drugs 24:341-351 (1982).

CA: 91:55094t Effect of Vitamin A on Nitrogen Metabolism in Mineral Substances, histo Structure of the Thyroid Gland of Young Rams 1977.

CA 71:21052z, Vitamin Enriched Grains Fr 1,530,248 6/1968.

CA 73:74385h, Influence of Vitamin A on the Development of Young Swine with Varying Levels of Complete Protein in Ration 1969.

CA 68:38349n Mushrooms in Foods 1966.

CA 74:21136s Effect of Glucocorticoid, Vitamin A, and Estrogens on Human Fetal Skin in Organ Culture.

*Primary Examiner*—Stanley J. Friedman  
*Attorney, Agent, or Firm*—Holman & Stern

## [57]

**ABSTRACT**

The present invention discloses a pharmaceutical composition and a method of treating retinoid induced pathogenesis. The pathological effect of retinoid is ameliorated by a suitable dose of a rescuing agent selected from the group consisting of choline chloride, methionine, betaine, biotin and inositol, the rescuing agent having the property of preventing formation of fatty liver.

**5 Claims, 2 Drawing Figures**